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TITLE

PRELIMINARY RESULTS OF A SPRAY TREATMENT FOR THE CONTROL OF THE CALIFORNIA PINE SCALE, Nuculaspis californica (Coleman), INFESTING PONDEROSA PI ON THE SAN BERNARDINO NATIONAL FOREST

by
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Berkeley, California
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SUBJECT—

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Evenden

Preliminary Results of a Spray Treatment For The Control Of The California Pine Scale, Nuculaspis Californica (Coleman), Infesting Ponderosa Pine On The San Bernardino National Forest.

On July 12, 1941, H. L. McKenzie carried on some preliminary spray tests for the control of the California pine scale, Nuculaspis Californica (Coleman), near the Hat Creek Field Laboratory in Shasta County, California. At that time he tested several materials and found, among those tested that a highly refined petroleum oil plus a toxic of cube resins dissolved in cardolite gave a very promising control. He also found that this material had no apparent injurious effect on the pine foliage. The infestation of the pine scale in this area, however, was comparatively light and it was decided to duplicate this work, in 1942, in an area where the pine scale was abundant. The area selected for the repeat test was the Crestline area of the San Bernardino National Forest where this scale was very abundant and was apparently doing severe local damage.

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Evenden JCR
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On June 9, 1942, H. L. McKenzie and R. C. Hall conducted a series of spray tests, this time using the formula of light petroleum oil and cube resins and a formula of oil alone. This work was done in the vicinity of the Crestline Guard station and the Seeley Camp ground, on the San Bernardino National Forest, in cooperation with the U. S. Forest Service and the University of California, Citrus Experiment Station at Riverside. Twenty trees were used in this experiment; eight using the oil and toxic, eight using straight oil, and four for checks. Late in July Ranger Lang kindly cooperated by sending samples of needles from these trees to the Hat Creek Field Laboratory for analysis. Counts were then made of old adult scales and newly developed progeny. The female scales had laid their supply of eggs and practically no live females were found even on the check trees. For this reason it was impossible to determine the effectiveness of the spray on the adults. However it was decided to determine the effectiveness of the spray by using the ratio of the number of newly settled scales to the number of old scale bodies.

Preliminary Results

The preliminary results of this spray test indicates that it has been highly successful in controlling the needle scale. Table 1 includes a summary of these results. From this table it may be noted that on the check trees there was an average of 27.6 old scales per needle on the 1941 growth compared to 25.3 new scales per needle on the 1942 growth or a ratio of new to old of .0.917. On the trees treated with oil and toxic there was an average of 38.2 old scales per needle on the 1941 growth compared to but 0.45 new scales per needle on the 1942 growth or a ratio of 0.012. On the trees treated with straight oil there was an average of 17.1 old scales per needle on the 1941 growth compared to but 0.07 new scales per needle on the 1942 growth or a ratio of new to old of 0.004. These preliminary results indicate that the straight oil appears to be more effective than the oil and toxic. This apparent superiority may have been due to sampling or to the difference in the density of the population of old scales. On the trees treated with oil and toxi there was an average of 38 scales compared to but 17 on the trees treated with oil alone.

Table 1
Results of Spray Treatment at Crestline, 1942 Season

Treatment	No. Trees	No. Old Scales per needle 1941 needles	No. New Scales per needle 1942 needles	Ratio New/Old
Check	4	27.6	25.3	0.917
1. Oil+Toxic	8	38.2	0.45	0.012
2. Oil alone	8	17.1	0.07	0.004

Table 2
Results of Spray Treatment at Hat Creek, Second Season After Application.

Treatment	No. Trees	No. New Scales per Needle, 1942 needles
Check	4	6.7
1. Oil+toxic	4	.5

Hat Creek Results - Second Season

A recent check on the trees treated by McKenzie at Hat Creek in 1941 with oil and toxic, indicate that the population of scales on the treated trees is very much lower than on the checks indicating that one application is effective for at least two seasons. From Table 2 it may be noted that the number of new scales on the treated trees is only 0.5 per needle compared to 6.7 per needle on the checks.

Further Checks Necessary

It was impossible to determine, for certain, from the needle specimens sent in, whether there had been any spray injury to the foliage but there appeared not to have been any. A further field examination will be necessary to determine this point. Also there should be a further count of scales on the treated and check trees in the field. It is planned to make this field check sometime during the late fall of 1942.

Respectfully submitted

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